

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JOHN HAROLD MAGERLEIN and ALBERT E. RUEHLI

Appeal No. 2001-1444
Application No. 08/994,706

ON BRIEF

Before THOMAS, RUGGIERO, and BLANKENSHIP, Administrative Patent Judges.

RUGGIERO, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal from the final rejection of claims 18-23. Claims 1-17 were canceled earlier in the prosecution. An amendment filed January 25, 2001 after final rejection, which canceled claim 21, was approved for entry by the Examiner. Accordingly, only the Examiner's rejection of claims 18-20, 22, and 23 is before us on appeal.

The disclosed invention relates to the decoupling of conductors used to distribute power and ground potentials in electronic packages and chips. More particularly, Absorbing Plane Terminators (APTs) are coupled between ground and power conductors of an electronic package. The APTs include a resistor with a value which matches the approximate characteristic impedance of the conductor structures, and a decoupling capacitor connected in series with the resistor. According to Appellants (specification, page 3), the APTs reduce electronic noise and electromagnetic radiation over a wide range of frequencies and also dampen resonances caused by the parasitic inductance of the decoupling capacitor.

Claim 18 is illustrative of the invention and reads as follows:

18. An electronic package having a plurality of conducting planes, said conducting planes including a power plane and a ground plane that, together, serve as a power distribution system, said power plane and ground plane exhibiting discontinuities that comprise at least one of: a periphery of a plane or an aperture through a plane, said electronic package further comprising:

a plurality of circuit elements connected only between said discontinuities of the power plane and the ground plane and at approximately uniformly spaced-apart intervals along each discontinuity, to minimize transient currents and voltages therethrough, said circuit elements each consisting of a capacitor in

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series with a resistor, said resistor having an impedance approximately equal to a characteristic impedance of said power distribution system at said discontinuities so as to absorb transient signals and prevent reflections thereof from said discontinuities.

The Examiner relies on the following prior art:

Yamashita et al. (Yamashita)	5,396,198	Mar. 07, 1995
Yamamura et al. (Yamamura)	5,844,762	Dec. 01, 1998
		(filed Dec. 12, 1996)

Claims 18-20, 22, and 23, all of the appealed claims, stand finally rejected under 35 U.S.C. § 103(a) as being unpatentable over each one of Yamashita and Yamamura.

Rather than reiterate the arguments of Appellants and the Examiner, reference is made to the Briefs¹ and the Answer for the respective details.

OPINION

We have carefully considered the subject matter on appeal, the rejections advanced by the Examiner, the arguments in support of the rejections and the evidence of obviousness relied upon by the Examiner as support for the rejection. We have, likewise, reviewed and taken into consideration, in reaching our decision, Appellants' arguments set forth in the Briefs along with the

¹ The Appeal Brief was filed October 6, 2000 (Paper No. 16). In response to the Examiner's Answer mailed November 20, 2000 (Paper No. 17), a Reply Brief was filed January 25, 2001 (Paper No. 18), which was acknowledged and entered by the Examiner in the communication dated February 22, 2001 (Paper No. 20).

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Examiner's rationale in support of the rejections and arguments in rebuttal set forth in the Examiner's Answer.

It is our view, after consideration of the record before us, that the evidence relied upon and the level of skill in the particular art would not have suggested to one of ordinary skill in the art the obviousness of the invention set forth in claims 18-20, 22, and 23. Accordingly, we reverse.

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the Examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.,

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776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the Examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

We consider first the Examiner's 35 U.S.C. § 103(a) rejection of appealed claims 18-20, 22, and 23 as being unpatentable over Yamashita. With respect to independent claim 18, the sole independent claim on appeal, Appellants' arguments in response to the Examiner's obviousness rejection assert a failure by the Examiner to establish a prima facie case of obviousness since all of the limitations of claim 18 are not taught or suggested by the Yamashita reference. At pages 12-15 of the Brief and page 7 of the Reply Brief, Appellants' arguments focus on the contention that Yamashita has no teaching or suggestion of selecting the load resistance value RL to be approximately equal to the characteristic impedance ZO as explicitly required by the language of claim 18. Appellants further assert that the fundamental operation of the Yamashita circuitry, which involves the generation of a reflective wave to

offset a voltage noise, requires a mismatching of impedances rather than the equality of impedances as claimed.

After careful review of the applied Yamashita reference in light of the arguments of record, we are in agreement with Appellants' position as stated in the Briefs. While it is proper for an Examiner to consider, not only the specific teachings of a reference, but inferences a skilled artisan might draw from them, it is equally important that the teachings of prior art references be considered in their entirety. See In re Preda, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968); W.L. Gore & Assocs. v. Garlock, Inc., 721 F.2d 1540, 1550, 220 USPQ 303, 311 (Fed. Cir. 1983), cert denied, 469 U.S. 851 (1984).

In particular, in order for us to accept the Examiner's conclusions in the present factual situation, we would have to improperly selectively ignore significant portions of the disclosure of the Yamashita reference. In our view, the skilled artisan, considering the teachings of Yamashita, would be led away from the approach as set forth in Appellants' claims, i.e., the selection of a load resistance value that is approximately equal to a characteristic impedance of a power distribution circuit. We reach this conclusion in view of the express disclosure at column 5, lines 10-31 of Yamashita which indicates

that the operation of the offsetting reflection wave generating circuitry requires a mismatching of impedances rather than the claimed equality of impedances. We are further persuaded, as pointed out by Appellants, that in the description beginning at column 9, line 22 of Yamashita, including equations (18)-(25) directed to the selection of RL and CL values, there is no teaching or suggesting that RL should be set equal to the characteristic impedance ZO.

We recognize that the Examiner, as fundamental support for asserting the obviousness of Appellants' claimed invention, has set forth (Answer, page 5) that " . . . it is well known in the art that maximum damping is obtained by equalizing the values of the two impedances." We find, however, no evidence forthcoming from the Examiner that would support such a contention. "[T]he Board cannot simply reach conclusions based on its own understanding or experience - or on its assessment of what would be basic knowledge or common sense. Rather, the Board must point to some concrete evidence in the record in support of these findings." In re Zurko, 258 F.3d 1379, 1386, 59 USPQ2d 1693, 1697 (Fed. Cir. 2001). See also In re Lee, 277 F.3d 1338, 1344-45, 61 USPQ2d 1430, 1434-35 (Fed. Cir. 2002), in which the court required evidence for the determination of unpatentability by

clarifying that the principles of "common knowledge" and "common sense" may only be applied to analysis of evidence, rather than be a substitute for evidence. The court has also recently expanded their reasoning on this topic in In re Thrift, 298 F.3d 1357, 1364, 63 USPQ2d 2002, 2006-07 (Fed. Cir. 2002).

We further agree with Appellants that, even assuming, arguendo, that the Examiner's supposition as to the well known aspects of equalizing impedances for maximum damping is taken as fact, to equalize impedances in Yamashita would be directly contrary to the explicit teachings of the reference. As clearly set forth in Yamashita (column 5, lines 10-64 and column 9, lines 22 through column 10, line 14), the principle of operation of this reference, which involves the generation of a reflection offsetting wave, depends on the mismatching of impedances, not the equalization of impedances.

In a similar vein, we find nothing in Yamashita's illustration in Figure 4 and the accompanying description beginning at column 10, line 32, cited by the Examiner in support of the obviousness rejection, that would convince us that the skilled artisan would be led to equalize impedances as claimed. Although Yamashita's Figure 4 illustrates a family of curves, one of which depicts the results of an approximate impedance

equalization, i.e., a 1.1 ratio of load resistance to characteristic impedance, the explicit disclosure of Yamashita directs the reader away from such impedance equalization. For example, Yamashita, at column 10, lines 63-65, states " . . . it is effective to set the ratio α of the resistance R_L to the characteristic impedance Z_0 to the range of from 4.5 to 5.0 times."

In view of the above discussion, since all of the limitations of independent claim 18 are not taught or suggested by the Yamashita reference, the Examiner has not established a prima facie case of obviousness. Accordingly, the Examiner's 35 U.S.C. § 103(a) rejection of claim 18, as well as claims 19, 20, 22, and 23 dependent thereon, is not sustained.

Turning to a consideration of the Examiner's separate obviousness rejection of appealed claims 18-20, 22, and 23 based on Yamamura, we do not sustain this rejection as well. As with the rejection based on Yamashita discussed supra, the underpinnings of the Examiner's position rest on the supposition that, although Yamamura does not specifically disclose the equalization of impedances, it is well known that impedances should be equalized for maximum damping. It is our view, however, that, similar to the factual situation involving

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Yamashita, even if the Examiner's supposition as to the equalization of impedances for maximum damping is accepted as fact, to do so in Yamamura would be in direct contrast to the explicit teachings of the reference. As pointed out by Appellants (Brief, page 19; Reply Brief, page 14), Yamamura directs the reader (column 7, lines 7-17) away from equalizing load resistance and characteristic impedance by teaching that the selected value of resistance 35 should be " . . . sufficiently lower than an impedance at a resonance peak when the resistor 35 is not connected."

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In conclusion, we have not sustained either of the Examiner's 35 U.S.C. § 103(a) rejections of any of the claims on appeal. Therefore, the decision of the Examiner rejecting claims 18-20, 22, and 23 is reversed.

REVERSED

JAMES D. THOMAS)	
Administrative Patent Judge)	
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JOSEPH F. RUGGIERO)	BOARD OF PATENT
Administrative Patent Judge)	APPEALS AND
)	INTERFERENCES
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HOWARD B. BLANKENSHIP)	
Administrative Patent Judge)	

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DAVID N. KOFFSKY
OHLANDT, GREELEY, RUGGIERO & PERLE
ONE LANDMARK SQUARE
STE. 903
STAMFORD, CT 06901